IN THE SPECIFICATION:

Please amend the appropriate paragraphs of specification in accordance with proposed changes as outlined hereinbelow:

Please amend the paragraph that bridges page 10, line 21 to page 11, line 6, as follows:

Meanwhile, as indicated by the solid line, in such a case that the lower end of the conduction band 3 is located obliquely above the top of the valence band 3, the direct emission transmission can not be made. Accordingly, it is required to carry out transition twice successively by a certain intermediate condition with any other scattering factor or interaction in order to cause emission transition. This is so-called as indirect transition. Further, a semiconductor of a king having such a band structure is called as an indirect semiconductor. For example, in an AlGaP group indirect semiconductor, the lower end of the ~~condution~~ conduction band 3 is located around an X point, and has a configuration as shown in Fig. 3.

Please amend the paragraph that bridges page 12, line 20 to page 13, line 23, as follows:

Thus emitted light beam having a wide spectrum, the increase and decrease of interference light with each of wavelengths are cancelled out each other, substantially no optical interference noise caused by a return light beam in an optical head is caused. For example, Figs. ~~7a and 7b~~ 17a and 17b show an example of optical interference noise which occurs in the optical head when the distance between an optical medium and the optical head varies and which is referred as fringe noise. In these figures, time 54 is taken on the abscissa, and the intensity 55 of reflected light is taken on the ordinate. In the case of using the indirect semiconductor laser having a high monochromaticity and sharp spectra (Fig. 17a), optical interference noise having a fringe pattern as shown in Fig. 17a is caused due to optical interference caused by a height of the monochromaticity when the distance between a disc medium and the optical head varies. On the ~~contracy~~ contrary, in the case of using the indirect semiconductor laser (Fig ~~17a~~ 17b), since the spectrum of the emitted light beam is wide, strength and weakness of the optical interference at each of the wavelengths are cancelled out with each other, and accordingly, substantially no fringe noise is cased, as shown in Fig. 17b. Further, since the optical activity of the indirect transition is not so high, the reaction to a return light beam from the outside is gentle, and accordingly, external optical interference and resonance can hardly occur. Due to this fact, laser noise from the laser element itself can hardly occur, and accordingly, there is offered such an advantage that a light source having low noise can be obtained.

Please amend the paragraph that bridges page 16, line 26 to page 17, line 1, as follows:

Fig. 6 is a view illustrating an example of the band structure in an adjacent confinement structure by an AlGaP ~~goup~~ group;

Please amend the paragraph that bridges page 19, line 6 to page 20, line 7, as follows:

In general, in the case of manufacturing a light emission element from a semiconductor, it is often to form a PN junction by jointly using thin film growth. By laminating semiconductor materials with the use of a metal-organic vapor phase ~~eptaxy~~ epitaxy growth (MOVPE) process, a molecular beam eptaxy (MBE) process or a gas source molecular beam epitaxy (MOVPE) process, ~~a multiplayer~~ there can be a multilayer structure in which different materials are laminated one upon another in combination of various thickness. At this stage, by interposing materials having conductive bands with lower ends which are located at different positions, between other kinds of materials, a structure in which electrons are accumulated at a lowest energy level can be built up, as shown in Fig. 4. This structure is named as a quantum well structure, in which electrons are accumulated in a cave of the conduction band while holes (electron holes) are accumulated on the top of a valence band. Each of the conduction band and the valence band is called as a band structure, and Fig. 4 shows a band structure pattern having energy levels of the above-mentioned quantum well structure which are typical energy levels located at, for example, at upper and lower ends. As to the band structure of the quantum well structure, there are presented a structure which is called as a type 1 and in which electrons and holes are confined in one and the same layer, and a structure which is called as a type 2 and in which only electrons or holes are confined as shown in Figs. 5a and 5b.

Please amend the paragraph that bridges page 20, line 12 to page 21, line 24, as follows:

In the case of the type 2 of the quantum well structure, if a usual single layer quantum well is used, either electrons or holes are alone confined in the quantum well. In order to cause light emission, it is required to allow electrons and holes to juxtapose to each other, and accordingly, a structure in which an electron confinement layer and a hole confinement layer are located being adjacent to each other, and both layers are interposed at opposite sides thereof between barrier layers for confining both electrons and holes, is required. This adjacent confinement structure is materialized by using a group of materials constituting the type 2 of the quantum well. As to this structure, in the case of using, for example, an AlGaP group semiconductor materials, an AlP layer and a GaP layer are adjacent to each other, and they are interposed at opposite sides thereof between AlGaP layers having a composition around 0.5, as shown in Fig. 6. In this adjacent confinement structure, both electrons and holes can be confined so as to enhance the efficiency of light emission recombination thereby to offer such an advantage that the efficiency of a light emission element can be enhanced. The AlGaP group adjacent confinement structure is disclosed in Applied Physics letters, Vol. 67, Page 1,048. Further, the adjacent confinement structure can be formed with an SiGe group indirect semiconductor. For example, a structure in which an Si layer and an SiGe layer in which the density of Ge composition is high are juxtaposed with each other, then they are interposed at opposite sides thereof between SiGe layers in which the density of the composition is intermediate, and thereafter all are laminated on a relaxation SiGe layer, may be formed as shown in Fig. 7. The SiGe group adjacent confinement structure is detailed in Applied Physics Letters. Vol 67, Page 524. The method of forming the above-mentioned structures can be made with reference to the above-

mentioned two documents in Applied Physics Letters. Further, a specific manufacturing method of the AlGaP group adjacent confinement structure will be explained later with reference to Fig. 8.

Please amend the paragraph that bridges page 22, line 15 to page 23, line 2, as follows:

In the type 2 of the asymmetric quantum well structure, the positions of the centers of distribution in the confinement layers for electrons and holes are different from each other, and accordingly, the spatial electric field varies simultaneously with extinction of electrons and holes during light emission. Accordingly, even with the indirect semiconductor, a provability of interaction of optical energy is always present, irrespective of the symmetry of atoms so as to offer such an advantage that the light emission transition can be possibly caused. That is, in the quantum well structure of the indirect semiconductor, a certain degree of optical transition provability can be ensured even with indirect transition with the use of an asymmetric quantum well structure, thereby it is possible to enhance the efficiency of light emission.

Please amend the paragraph that bridges page 26, line 16 to page 27, line 15, as follows:

This phenomenon can be explained as follows:

In comparison with a direct semiconductor, the indirect semiconductor has such a property that carriers which are accumulated in the semiconductor are diffused through crystal by a long distance. Once the carriers are sufficiently diffused, large volume of current is required in accordance with an area of the active layer. However, should a large volume of current be immediately fed initially, it would cause such a condition that strong excitation occurs only around the electrodes before the carriers are sufficiently diffused since the diffusion of the carrier cannot follow up soon. With such local strong excitation, since a local gain resonant condition is created, a gain resonator structure temporarily having a sharp gain is formed, and accordingly, oscillation in a single mode or a multimode is caused. In the oscillating condition in each of these modes, optical interference noise or laser noise is caused, similar to the direct semiconductor laser. As to this phenomenon, in the case of the direct transition type, it is likely to cause oscillation with a broader spectrum if the drive current pulse is made to be sharper. On the contrary the indirect semiconductor laser may be in contrast with the direct semiconductor laser in view of such a point that a stable broad band cannot be obtained if the pulses is sharper.

Please amend the paragraph that bridges page 32, line 20 to page 33, line 28, as follows:

In such a case that the half-value width of the spectrum of the indirect semiconductor is too wide so as that aberration of a lens causes a problem, a distribution Bragg reflector (DBR) is formed at one of side end faces of the laser so as to improve the half-value width. The distribution Bragg reflector is a kind of multi-layer reflection films, and has a continuous and mountain-like gain distribution as to reflectance diffusion with respect to wavelengths, and accordingly, the gain of the resonator can be totally adjusted by changing the period or the number of laminated layers thereof. The distribution Bragg reflector can be materialized by laminating multi-layers

having different refraction indices, 1/4 wavelength by 1/4 wavelength. For example, quartz (SiO_2) having a thickness of 95 nm and titanium oxide (TiO_2) having thickness of 60 nm are alternately laminated one upon another, by several to several ten periodical layers. It is noted that the specific film thickness thereof is adjusted more or less in accordance with a refraction index which varies in dependence upon a manufacturing condition. This distribution Bragg reflector 41 is located at an end face of the laser chip 40 as shown in Fig. 13 so that the half-value width of the oscillation wavelength of the indirect semiconductor laser can be adjusted. It is noted that Fig. 13 shows a laser chip structure for end face emission, and accordingly, if a configuration of a surface emission laser of a vertical resonance type is selected, a multi-layer structure having a thickness of a 1/4 wavelength is added to each of opposite sides of the active layer and the first barrier layer. For example, a multi-layer structure in which a ~~GaO~~ GaP layer having a thickness of 42 nm, and an AlP layer having a thickness of 49 nm are alternately repeated by 10 periods may be inserted on both outsides of the active layer and the first barrier layer.

Please amend the paragraph on page 39, lines 2 to 17, as follows:

Thus, with the use of the indirect semiconductor laser as a light source, a light beam having a broad spectrum can be used as a light beam for reading a pattern on a medium, and optical interference noise in the optical head can be greatly reduced. There may be presented such an advantage that the high frequency wave convolution is not required, and accordingly, the reproduction rate for recording data on the disc medium, which has been limited by the frequency can be greatly enhanced. Since the provision of a circuit for the high frequency of the high frequency wave convolution on an optical head (a movable part), which has been required in a conventional configuration, is not required, the optical head can be small-sized while the electric wiring is ~~mimized~~ minimized.